From:	TARNOW Karen E
To:	Eric Blischke/R10/USEPA/US@EPA; Chip Humphrey/R10/USEPA/US@EPA
Cc:	Kristine Koch/R10/USEPA/US@EPA; TARNOW Karen E
Subject:	recontamination model for lagoon
Date:	06/28/2010 01:07 PM

Eric and Chip –

If you're agreeable, I'd like to get the ball rolling re: getting Parametrix's help with a recontamination eval for the Swan Island Lagoon. Below are my initial thoughts on how to approach it. Please let me know how to proceed. Thanks!

Karen

Task: Estimate the change in sediment contaminant concentration in Swan Island Lagoon over time as influenced by stormwater discharges and the river itself.

1. For starters, define the lagoon as the long interior lobe, i.e., draw a line from the northern most part of Cascade General (CG) to the other side of the lagoon, forming a rectangle. Assume complete mixing within this rectangle.

2. Use Zidell's model as a starting point

4.1.1 COC concentrations in Stormwater Solids

- Assume that all of the runoff into the lagoon comes from the City's M 1-3 and S1-2 basins and the relevant subbasins at Cascade General and Port.

- Same methodology as Zidell for annual runoff volume/mass loadings. I probably have total square feet for City Outfall basins; will dig it out. Use CG stormwater eval report for area of their basins.

- DEQ will provide stormwater contaminant and TSS concentrations for each basin/subbasin.

4.1.2 COC Concentration in Upstream Sediment

- Use sediment PRGs as a starting point

4.1.3 Sedimentation

- Zidell used bathymetry data to develop a sedimentation rate. In addition to bathymetry data from LWG, there are probably other sources of information (dredging records?) that could be used.

- Zidell assumed that the sedimentation rate from the river is the difference between the total sedimentation rate and the sedimentation from stormwater sources.

- Sediment density – I'm open to suggestions if we want to deviate from their value (90 lbs/cf)

3. See attached email ("another thought") for more info on models (e.g., how to deal with multiple sources) from Kristine

4. Once we get the model set up we can start playing around with some of the variables.

<<Re: another thought>>

Karen Tarnow

Oregon DEQ

Portland Harbor Stormwater Coordinator

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----- Message from <Koch.Kristine@epamail.epa.gov> on Tue, 15 Jun 2010 12:59:15 -0700 -----

To: "TARNOW Karen E" <TARNOW.Karen@deq.state.or.us>

Subject: Re: another thought

Yes - for off-the-shelf models, CORMIX will work great. UPLUMES is ok, but the modeler has to know where the boundaries (bottom of river, surface of water, any land or other physical boundaries) are because the model doesn't and will keep running until criterion is met (I saw one model in Alaska that had the plume going through an island!).

Here is a link to CORMIX.
http://www.mixzon.com/

I used this model for a pulp mill in Idaho to show that the new dioxin limits in the permit would not contaminate the sediment of the Snake River.

Note that These models are for a single source/outfall. If there are multiple sources that you want to assess, like all the discharges into Swan Island lagoon, then you need a model like WASP (note you can link CORMIX and WASP or other watershed model so that each individual plume is overlayed into the larger WASP model). WASP is similar to the model that Bruce Hope developed.

Here is a link to EPA's watershed models (note - you can build the model to any scale).
http://www.epa.gov/athens/wwqtsc/index.html

I also have a guidance document 1985 Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water (Parts 1 and 2) that give details on how to "build your own model."

Regards,

Kristine Koch
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From: "TARNOW Karen E" <TARNOW.Karen@deq.state.or.us>

To: Kristine Koch/R10/USEPA/US@EPA

Date: 06/10/2010 01:33 PM

Subject: another thought

If someone wanted to write a NPDES individual permit to prevent recontamination, they'd need to have some sort of model for evaluating recontamination potential in order to come up with the permit limits, right? Have you seen anything like this being used in the NPDES world? Or know any states that might have had to figure this out?

Karen Tarnow

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